



Solid State Devices, Inc.

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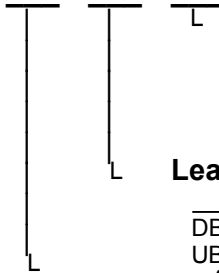
SFF3810 Series

350 AMP , 75 Volts, 2.5 mΩ Avalanche Rated N-channel TrenchFET

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFF3810



Screening ^{2/}

— = Not Screened
TX = TX Level
TXV = TXV Level
S = S Level

Lead Option ^{3/}

— = Straight Leads
DB = Down Bend
UB = Up Bend

Package ^{3/ 4/}

Q = TO-258 modified
E = MILPACK III

Features:

- Rugged poly-Si gate
- Lowest ON-resistance in the industry
- Avalanche rated
- Hermetically Sealed, Isolated Package
- Low Total Gate Charge
- Fast Switching
- TX, TXV, S-Level screening available
- Improved ($R_{DS(ON)}$) Q_G figure of merit

Maximum Ratings ^{5/}		Symbol	Value	Units
Drain - Source Voltage		V_{DSS}	75	V
Gate - Source Voltage	continuous transient	V_{GS}	± 20 ± 30	V
Max. Continuous Drain Current (package limited)	@ $T_C = 25^\circ C$	I_{D1}	60	A
Max. Instantaneous Drain Current (Tj limited)	@ $T_C = 25^\circ C$	I_{D2}	350	A
	@ $T_C = 125^\circ C$	I_{D3}	150	A
Max. Avalanche current	@ L= 0.1 mH	I_{AR}	200	A
Single and Repetitive Avalanche Energy	@ L= 0.1 mH	E_{AS}	3000	mJ
Total Power Dissipation	@ $T_C = 25^\circ C$	P_D	600	W
Operating & Storage Temperature		T_{OP} & T_{STG}	-55 to 175	$^\circ C$
Maximum Thermal Resistance (Junction to Case)		$R_{\theta JC}$	0.5	$^\circ C/W$

NOTES:

*Pulse Test: Pulse Width = 300μsec, Duty Cycle = 2%.

1/ For ordering information, price, and availability - contact factory.

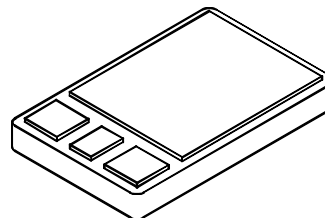
2/ Screening based on MIL-PRF-19500. Screening flows available on request.

3/ For lead bending options / pinout configurations - contact factory.

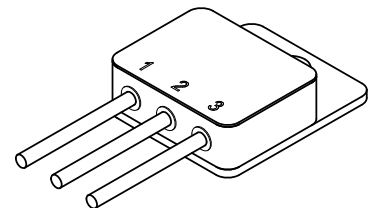
4/ Maximum current limited by package configuration

5/ Unless otherwise specified, all electrical characteristics @25°C.

MILPACK III (E)



TO-258 modified (Q)



NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: FT0051A

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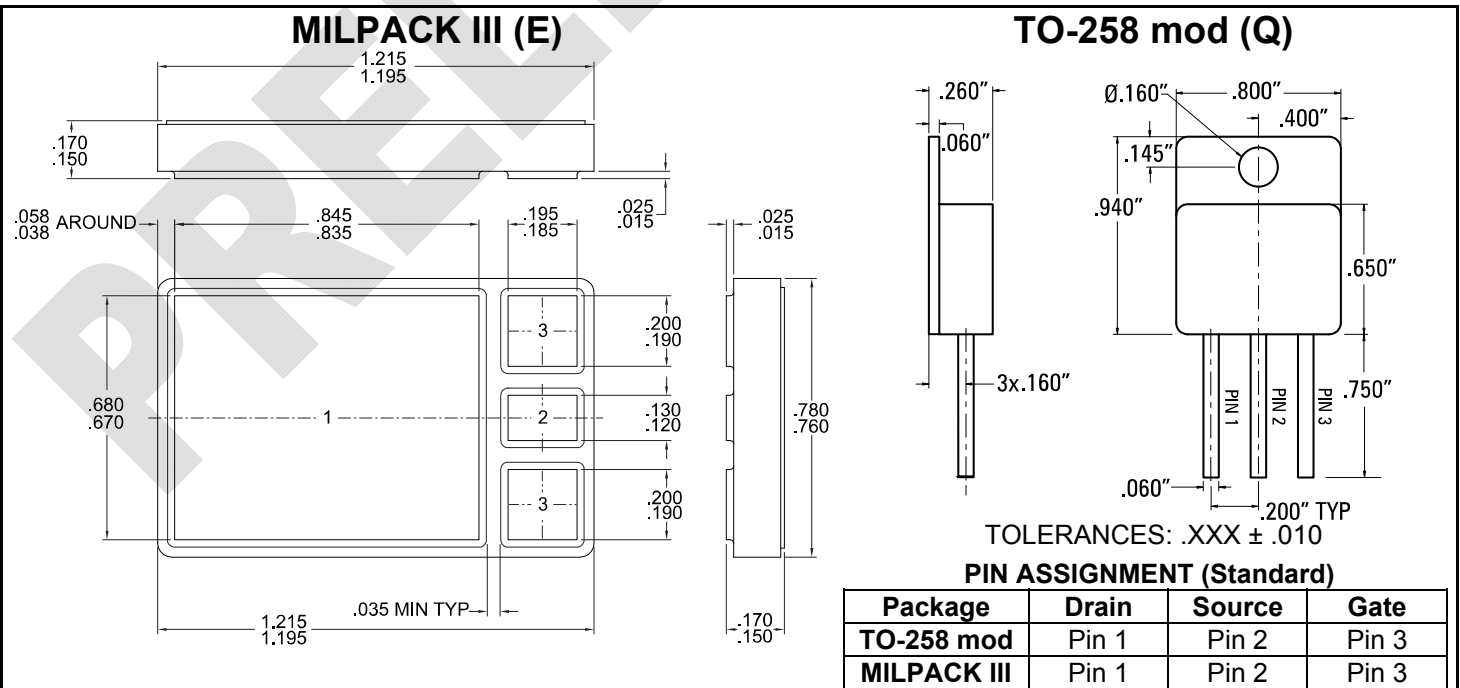


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Electrical Characteristics ^{5/}	Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage $V_{GS} = 0V, I_D = 3 \text{ mA}$	BV_{DSS}	75	80	—	V
Drain to Source On State Resistance $V_{GS} = 10V, I_D = 125A, T_j = 25^\circ C$ $V_{GS} = 15V, I_D = 125A, T_j = 25^\circ C$ $V_{GS} = 10V, I_D = 125A, T_j = 175^\circ C$	$R_{DS(on)}$	—	2.5 2 5	3 —	mΩ
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 8.0mA, T_j = 25^\circ C$ $V_{DS} = V_{GS}, I_D = 8.0mA, T_j = 125^\circ C$ $V_{DS} = V_{GS}, I_D = 8.0mA, T_j = -55^\circ C$	$V_{GS(th)}$	2.5 1.5 —	3.6 3.0 5	5.0 — 6	V
Gate to Source Leakage $V_{GS} = \pm 20V, T_j = 25^\circ C$ $V_{GS} = \pm 20V, T_j = 125^\circ C$	I_{GSS}	—	10 30	± 200 —	nA
Zero Gate Voltage Drain Current $V_{DS} = 75V, V_{GS} = 0V, T_j = 25^\circ C$ $V_{DS} = 75V, V_{GS} = 0V, T_j = 150^\circ C$	I_{DSS}	—	0.06 150	25 2000	μA μA
Forward Transconductance $V_{DS} = 10V, I_D = 60A, T_j = 25^\circ C$	g_{fs}	65	100	—	Mho
Total Gate Charge $V_{GS} = 10V$	Q_g	—	550	—	nC
Gate to Source Charge $V_{DS} = 37.5V$	Q_{GS}	—	180	—	nC
Gate to Drain Charge $I_D = 200A$	Q_{GD}	—	140	—	nC
Turn on Delay Time $V_{GS} = 10V$	$t_{d(on)}$	—	50	—	nsec
Rise Time $V_{DS} = 37.5V$	t_r	—	40	—	
Turn off Delay Time $I_D = 200A$	$t_{d(off)}$	—	80	—	
Fall Time $R_G = 1.0\Omega, pw = 3\mu s$	t_f	—	40	—	
Diode Forward Voltage $I_F = 100A, V_{GS} = 0V$	V_{SD}	—	0.90	1.25	V
Diode Reverse Recovery Time $I_F = 150A, di/dt = 100A/\mu sec$	t_{rr1}	—	150	—	nsec
Reverse Recovery Charge	I_{rm1} Q_{rr1}	—	7 360	—	A nC
Input Capacitance Output Capacitance Reverse Transfer Capacitance $V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1 \text{ MHz}$	C_{iss} C_{oss} C_{rss}	—	41 4.15 530	—	nF nF pF



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